

**Hu7 CD SYSTEM
SOFTWARE MANUAL**

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SOFTWARE

Chapter 1 SOFTWARE

The Hu7 CD system contains a 2HD floppy disk providing the following software. The software operates under MS-DOS ver3.1.

Description of terms

CD Contents	The Hu7 CD Contents Hard Disk Unit and the data area on the unit that contains the CD data is called CD Contents.
MS-DOS Partition	A part of the hard disk is secured for MS-DOS on the Hu7 CD contents hard disk unit. This is called the MS-DOS partition.
1) SCSIDEV.SYS	Device driver for an additional hard disk (620M), 8mm MT drive, and MS-DOS drive.
2) HDMUSIC.EXE	Records, plays, edits, and saves data for linear PCM. By using a bus mouse, this transfers data between the 8mm MT and CD contents, and between CD contents and MS-DOS.
3) ADPCM.EXE	Records, plays, edits, and saves data for ADPCM. By using a bus mouse, this creates MS-DOS data.
4) HDWRITE.EXE	Saves MS-DOS files to CD contents. It also adds, fetches, deletes, and lists files. It can be retrieved by batch file or by "make command" since it is a command line type of command.
5) CV.EXE	Converts the MX/BX file created by AS.LK to the file format (binary) used for CD.
6) INFGET.EXE	Converts file information saved in CD contents to the EQU file, which can be referenced by a program, and outputs this to the standard output.
7) CDEMULEXE	Emulates a CD-ROM2 drive through parallel I/O connected to the Hu7. Possesses monitor functions for the received commands.
8) BACKUPEX.EXE	Records files contained in CD contents to 8mm MT. MT can be saved as a master.
9) VERIFYEX.EXE	Compares the contents of CD contents to those of the 8mm MT. To verify the accuracy of the master, this must be executed. Print out the results to list the master contents.
10) RESTOREX.EXE	Restores data from 8mm MT to CD contents. This is used to restore data recorded by BACKUPEX.EXE to CD contents.

- | | |
|------------------|--|
| 11) LISTEX.EXE | Displays a listing of the contents of the 8mm MT. |
| 12) MSBACKUP.EXE | Records MS-DOS files to 8mm MT. Possesses add, fetch, and display list functions. Used for routine program BACKUP. |
| 13) SFTFMT.EXE | Initializes the MS-DOS drive that is used by the CD contents unit. Format has already been done so use of this is not necessary. |
| 14) EJECT.EXE | Opens the door of the 8mm MT. |
| 15) HDTOC.EXE | Outputs TOC information of the CD. Print the result as a part of master documents. |
| 16) HD384FMT.EXE | Executes physical format in case of an error on a hard disk. |

Production Sequence

Chapter 2 PRODUCTION SEQUENCE

The following are the sequences required for creating various kinds of data and programs for CD-ROM2. Let's assume that this CD system is available for a programmer and a person who records linear PCM. The production sequence of program, picture data, ADPCM data, and linear PCM data are as follows:

2.1 Creating Programs

1. Creating IPL

Create IPL and write data by using HDWRITE. (See IPL)

2. Estimating the data capacity and securing the program and data area

Assume that plan and data structures are set. Estimate the capacity of each data as maximum. Because CD Contents Unit can only manage the programs and data as if it were on tape, secure the maximum capacity for program and data areas and organize them by name. For example, if you use 1M byte for your program, prepare as much as 2M bytes. 2MB can be controlled, but it will be better to divide it into 32K or 64K bytes. Files will be saved to CD contents using HDWRITE.EXE. (See HDWRITE.EXE)

Example. HDWRITE -U10000, 0 PRG PRG1.BIN

The above means that 10000H (64KB) is secured in CD Contents under the group name PRG, and the file name PRG1.BIN. You can repeat this 32 times to get 2M bytes. Secure the data area in the same way.

3. Getting record number

Now, all programs and data areas are set in CD contents. You need to know the registered record number to get access to those programs and data. INFGET is the command for that. Always use this command to create a table.

4. Editing programs

Create programs with an editor.

5. Creating CD files

After creation of programs, use the assembler, linker, and converter to convert them to CD file format (binary). Use each tool as follows:

AS (Relocatable binary file)	: Assemble
LK (MX/BX file)	: Link
CV (Binary file)	: Convert

6. Writing files in CD

Write the files into CD Contents. With step 1, the area was secured for use, so execute HDWRITE to write files to CD Contents.

2.2 Creating Character Data

1. Creating data

Use various kinds of programs to create character data.

2. Creating CD files

Since the data format differs from program to program, convert files to binary files for creating CD files.

3. Writing files in CD

Write binary files into CD Contents. Execute HDWRITE at the secured area.

2.3 Creating ADPCM Data

1. Executing live recording

First, decide what you want to record, then record it using a cassette tape recorder.

2. Recording as ADPCM data

Record and save it as ADPCM data by using ADPCM.

3. Editing

If necessary, use multiple ADPCM data for editing.

4. Creating CD files

The data created at ADPCM is binary formatted. No change is necessary.

5. Writing files in CD

Write binary files into CD Contents. Execute HDWRITE at the secured area.

2.4 Creating Linear PCM Data

1. Executing live recording

First, decide what you want to record. Then record it using a 2 track 38 tape recorder. As the linear PCM data is heard by a user as CD audio, a good recording system should be used.

2. Recording it as linear PCM data

Record and register data as linear PCM data by using HDMUSIC.

3. Backing up to 8mm MT

As the file volume of linear PCM data is too large to be handled by 2HD floppy disks, use 8mm MT.

4. Delivering the linear PCM data to a programmer

A programmer saves the received data to CD contents by using HDMUSIC or he/she adds them using the RESTOREX A (append) option.

2.5 Creating a Master

1. Creating a master tape

Record CD contents to 8mm MT by using BACKUPEX. It will take (depending on the volume) up to 2 hours.

2. Examining a master tape

Compare the 8mm MT with CD contents using VERIFYEX. The list of contents of the 8mm MT will become a file.

3. Creating TOC list documents

Create the TOC list by using HDTOC.EXE and print out the document.

4. Executing a file listing

Print out the file created by VERIFYEX. This is a part of the master document. Create three tapes as master tapes. One of them is for your records. Submit the other tapes as the masters. Write the necessary items in the BIOS usage information form and turn it in with forms 3,4, and the two 8mm MT master tapes. To protect the master tapes, turn in a set of presented master verification forms as well.

Master presentation documents and MT:

1. File list
2. TOC list
3. 8mm MT - two tapes
4. BIOS usage information form
5. Presented master verification forms

SCSIDEV.SYS

Chapter 3. SCSIDEV.SYS

3.1 Outline

This file is a device driver operated by MS-DOS ver3.1, or higher, and it controls the 620MB hard disk and 8mm data cartridge ,etc. through SCSI interface.

3.2 System Requirements

Please note that this cannot work on machines manufactured before the PC-9801VX because of DMA.

3.3 Execution Sequence

This driver configures 6 software interrupts (INT command) from the number specified by the CONFIG.SYS file at start up time as an interface into MS-DOS. Therefore, it is necessary to specify the software interrupt at application.

3.4 Option Specification

A 298MB MS-DOS drive can be used as an option, but the maximum capacity for one drive is limited to 60MB by MS-DOS. Specification of software interrupt numbers is also possible.

3.5 Format

The MS-DOS partition operated by this drive cannot be initialized by the `FORMAT` program of MS-DOS. To construct a new system, to secure a new MS-DOS partition, or to change capacity, initialize with the attached `SFTFMT` command. (See `SFTFMT`)

3.6 Control Information

As this driver secures the 8MB MS-DOS partition as a control drive (used by system) at the end of 620M hard disk, the actual maximum capacity becomes 628MB.

3.7 Set Up CONFIG.SYS

To use this system, modify the CONFIG.SYS file into a device driver. The method of specification is the same as that for device driver specification. Specify path and file names of SCSIDEV.SYS. This device driver can specify the following options:

1. MS-DOS partition to be secured on 620MB hard disk

There are two specification methods; to specify by mega byte, use a 1/2 sized number and a 1/2 sized letter [M] after / as in example 1. To specify by kilo byte, use a 1/2 sized number and a 1/2 sized letter [K] after / as in example 2. A maximum of 60M can be specified. The maximum drive number is 7, but the total volume capacity is 298M.

Note: K is times 1024, and M is 1024 times of K.

Example 1. DEVICE=A:\SCSIDEV.SYS /40M

Example 2. DEVICE=A:\SCSIDEV.SYS /40960K

2. Specifying software interrupt numbers

Specify them after the 1/2 sized [#] symbol by using 2 digit hexadecimal numbers. If this option is omitted, #68 will be specified. When using Japanese FP, specify software interrupt numbers not used by them.

3.8 Title at Execution

When this device driver is set up, the following titles will be displayed to tell you a device driver number, the secured drive, and its volume.

Example 1. When the following instruction is specified without two 2HD hard disks
DEVICE = A:\SCSIDEV.SYS

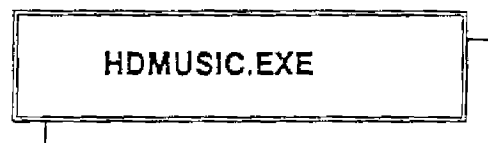
Translation: Can be used as a hard disk device driver Ver 1.00 (INT68H-6DH used) drive (C:8M)

ハードディスク デバイスドライバー Ver 1.00 (INT 68H 6DHを使用)
ドライブ (C:8M) として使用可能です

Example 2. When the following instruction is specified without two 2HD hard disks
DEVICE = A:\SCSIDEV.SYS #50 /60M /20M /10M

Translation: Can be used as a hard disk device driver Ver 1.00 (INT50H-55H used) drive (C:8M D:60M E:20M F:10M)

ハードディスク デバイスドライバー Ver 1.00 (INT 50H 55Hを使用)
ドライブ (C:8M D:60M E:20M F:10M) として使用可能です



Chapter 4. HDMUSIC.EXE

4.1 Outline

This program has two functions. One is to record, playback, edit, and save linear PCM and the other is to back up and transfer files.

4.2 Linear PCM Data Processing Concept

The following five functions are provided for linear PCM and are done in CD contents:

1. Record

This is a function used to record onto a hard disk from audio tapes or other media. Note that a sound length less than 4 seconds is not allowed when recording linear PCM on CD, so the minimum file size (4 sec) is 690K.

Warning: Recorded data is not set under system control without saving. Always save your important data. Refer to "Save" for details.

2. Playback

This is a function to transform a hard disk to a super CD player. It is much faster and better in quality than any other CD player in the market.

3. Edit

Basically this is a function to edit the area controlled on CD contents. This can edit not only music, but also data, programs, etc.

4. Save/Delete

Save/Delete is used to start or stop the handling of data (at the end of the hard disk) as CD data. In other words, "Save" puts data on the hard disk under system control and "delete" sets free the data from system control.

5. Visualize

This will visualize audio data using a wave form to graphically display the audio data.

Flow of linear PCM data creation



4.3 File Processing Concept

Normally, transfer from MS-DOS to CD Contents is done by using HDWRITE.EXE. However, HDWRITE.EXE is designed to receive all parameters from the command input of the shell, in case a big modification of the MAKE file takes place. So, for small changes or cases where visual control is desired, a function other than HDWRITE can be used. The following two functions are provided for file processes:

1. Related to 8mm MT

Function to read and write data to 8mm MT. As a file volume is too big to handle linear PCM data for 2HD floppy, 8mm MT must be used.

2. Related to OS

Function to playback, delete, rename, and list files of the CD Contents files.

4.4 Execution Method

Executes from the MS-DOS command line.

4.5 Option Specification

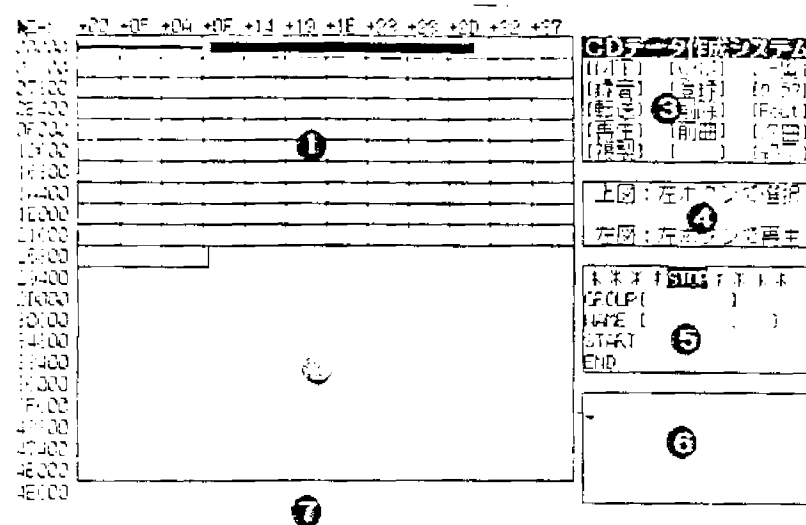
No option specification.

4.6 Format

HDMUSIC

4.7 Display at Execution

When HDMUSIC is executed, the screen looks like this:



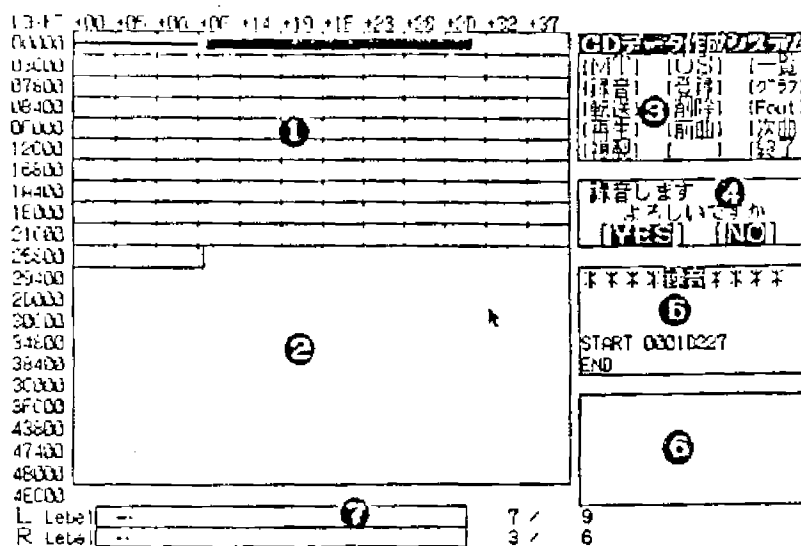
4.7.1 Function of each area

1. CD contents area map:
This is used to specify a record number. Left clicking roughly specifies a record number. Playback also starts from the location. Right clicking stops playing.
2. MS-DOS area:
This is the area secured in the CD Contents Hard Disk Unit for the MS-DOS partition. Clicking here has no effect.
3. Command select area:
Area to select each function. Clicking here executes each transaction.
4. Message line to users:
A message from the program side is displayed here.
5. Status display and message line:
Present CD player status such as playback, record, stop, or delete is displayed. When playback is executed, the record number of the starting record and the interrupted record number will be displayed.
6. Message to be saved separately from area (5) such as register/transfer is displayed. Normally nothing is displayed here.
7. Plain graph:
Normally nothing is displayed, but if necessary, a graph is displayed. This is to help you visually control the music.

4.8 Commands

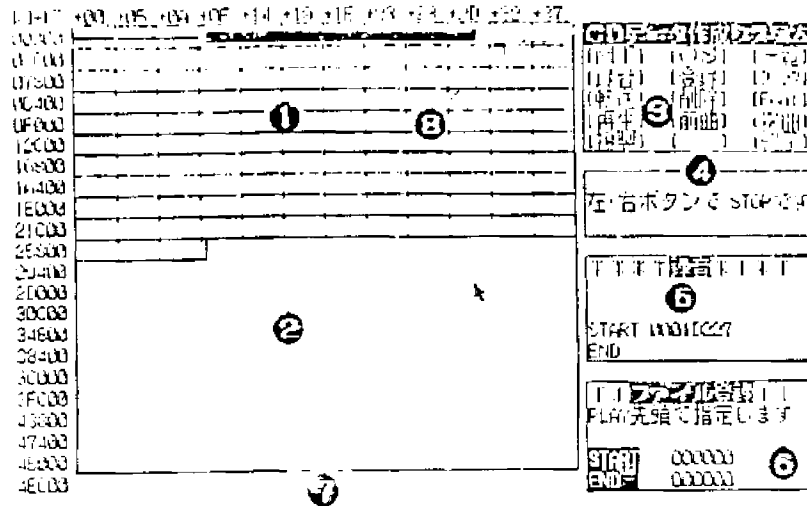
4.8.1 Record

This is to record linear PCM data in the open area of CD Contents and to prepare it for saving.



1. Recording procedure

- a) Click "record" in command select area (3) with the left button.
- b) The above display appears and status is now "ready to record" showing the plain level meter shown at (7). Adjust levels by using the meter. The plain level meter indicates in db the value for left and right, separately. Color between cyan and red is -14db and scales are not set regularly. The number on the right side of the meter is digital absolute value of present value and maximum value. The number value would be 0 through 32768. Status display (5) becomes "record" and the starting record number to be recorded at START is displayed.

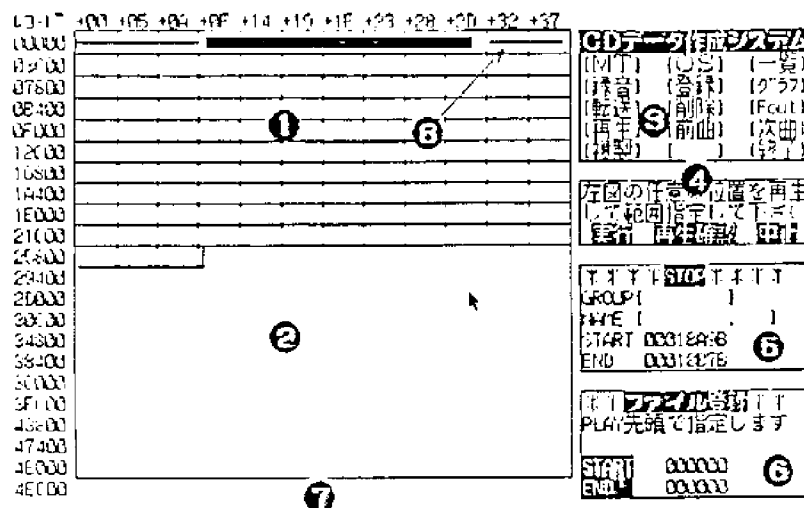


- c) Start recording after level adjustment is completed. If YES is selected, the above display will appear and start recording. White lines such as (8) will increase in the area (1) while recording. If you need to cancel, select NO when the system asks a user to confirm Y/N at the message line, or a right click will stop this command. If retry is necessary, start again from a).
- d) Either right or left click will stop recording. At this time, the white lined area will change into a red line. This shows the recorded area and lets you know about the next time for saving.

Note: If [MT] [OS] [List] [Graph] is selected, although these lines disappear, the contents will remain to allow you to save.

4.8.2. Save

This is to put PCM data on the hard disk (recorded or already registered) under system control and additionally save them as files. Recording is necessary before this command. (Always added to the end of the file control)



Saving Procedure

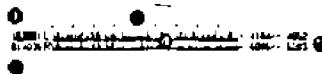
- Click "register" in command select area (3) with the left button.
- The above display appears with the area specified. The red reversed characters [Execute] [Check Playback] [Stop] will be displayed at the message line to the user (4).
- Specify the range you want to save. Specify starting and ending locations. There are two ways of specifying:

A. Click CD Contents (1) directly.

In this way, the record number clicked with the left button will be displayed in area (5). First, specify starting location to be saved in area (1) by clicking. Click "start" in area (6) with the left button to specify the start location. In the same manner, click the end location in area (1). Then, click "end" in area (6) with the left button to specify the end location.

B. Display plain graph (7).

First, click CD contents (1) directly to specify the appropriate location. Next, click plain graph (7) with the left button. The next graph will appear in "plain graph mode". You can specify detailed record numbers by looking at the graph indicator. The record number is displayed at the lower left of the plain graph. Refer to "plain graph" for details. Then, specify the starting location to be saved in plain graph. Next, click "start" in area (6) with the left button to specify the start location. In the same way, specify the end location in plain graph. Then, click "end" with the left button to specify the end location.



- d) Confirm the area to be saved. Click "Check playback" with the left button to make sure that the area to be saved is correct. The area to be saved will be played.
- e) Saving. If the area that you want to save is correct, click "Execute" with the left button.
- f) Save by using a group name or a file name. Type in group and name in area (6) for input. Files in CD Contents are stored under the group and file names. Specification of a group name is not necessary, but it is better to use the name for convenience.
- g) Start saving. At this time, POST GAP (4seconds of blank) can be inserted right after the data file. It will take longer to save than to record.

4.8.3 Playback

This is to playback the audio data from top, which is recorded in CD contents. The track is the one previously played. A left click of CD contents at (1) will change the playback location. This is used to listen to the recorded data. The current playback location is shown as white lines (2). To stop playback, click the right button.

10-17 +03 +05 +09 +0F +14 +19 +1E +23 +28 +2D +32 +37

00000
05000
07800
08400
0F000
12000
1C000
1A400
1E000
21000
25600
29400
21000
30C00
34800
38400
3C000
3FC00
43600
47400
49800
4EC00

4.8.4 Previous song

This is to start playback from the top of the preceding song which played before the current song. Use this command to listen to the recorded contents. Current playback location is shown as white lines (2). To stop playback, click the right button.

UD-F *00 *05 *0A *0F *14 *19 *1E *23 *28 *2D *32 *37

00000
04000
08000
0B000
0F000
12000
16000
1A000
1E000
21000
25000
29000
2D000
30000
34000
38000
3C000
3F000
43000
47000
4B000
4E000

00データ操作メニュー
[リリ] [OS] [一覧]
[録音] [録録] [クラ]
[転送] [削除] [Foot]
[再生] [前曲] [次曲]
[複製] [] [終了]

左ボタンで再生位置変更
右ボタンで STOPです

本々々々々々々々々々々々
GROUP[serif]
NAME [serifu02.]
START 00003307
END 00003460

4.8.5 Next song

This is to playback from the top of the song next to track played before. Use this command to listen to the recorded contents. Current playback location is shown as white lines (2). To stop playback, click the right button.

UD-F *00 *05 *0A *0F *14 *19 *1E *23 *28 *2D *32 *37

00000
04000
08000
0B000
0F000
12000
16000
1A000
1E000
21000
25000
29000
2D000
30000
34000
38000
3C000
3F000
43000
47000
4B000
4E000

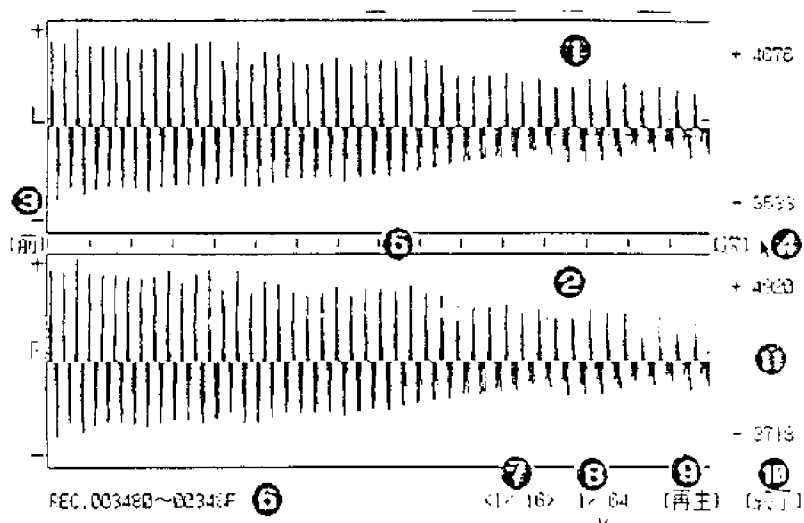
00データ操作メニュー
[リリ] [OS] [一覧]
[録音] [録録] [クラ]
[転送] [削除] [Foot]
[再生] [前曲] [次曲]
[複製] [] [終了]

左ボタンで再生位置変更
右ボタンで STOPです

本々々々々々々々々々々々
GROUP[serif]
NAME [serifu03.]
START 00003460
END 00003569

4.8.6 Graph

This is to visualize PCM data on the hard disk. It starts graphing from the top of the preceding play. The display becomes as shown below:



Explanation of each area:

1. Graphic display area for the left channel
2. Graphic display area for the right channel
3. (Preceding) is the preceding block display
4. (Next) is the next block display
5. 2048 bytes unit scale. If area 1, 2, or 5 is clicked, start redisplay from the record.
6. Graphic record range
7. Sampling interval for graph data. 1/1 is continuous data, 1/16 is 16 pcs. (32 words) interval.
8. Scale of graph data. 1/1 is graph as it is, 1/64 is to reduce the graph to 1/64 size.
9. Clicking the left button plays the graphic range
10. Clicking the right or the left button terminates this command
11. Minimum and maximum value in the graphic record range

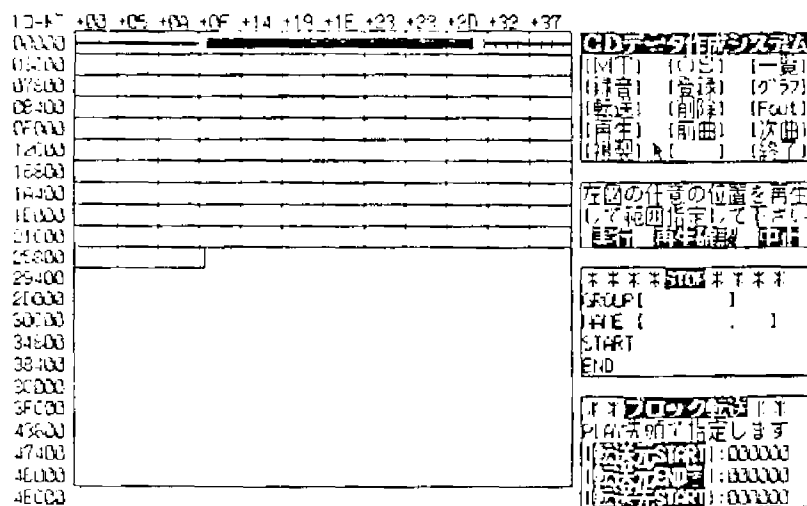
4.8.7 Transfer

This is to transfer data on the hard disk to another area. It can also transfer re-recorded linear PCM data to an area where data is already saved.

1. Operation procedure

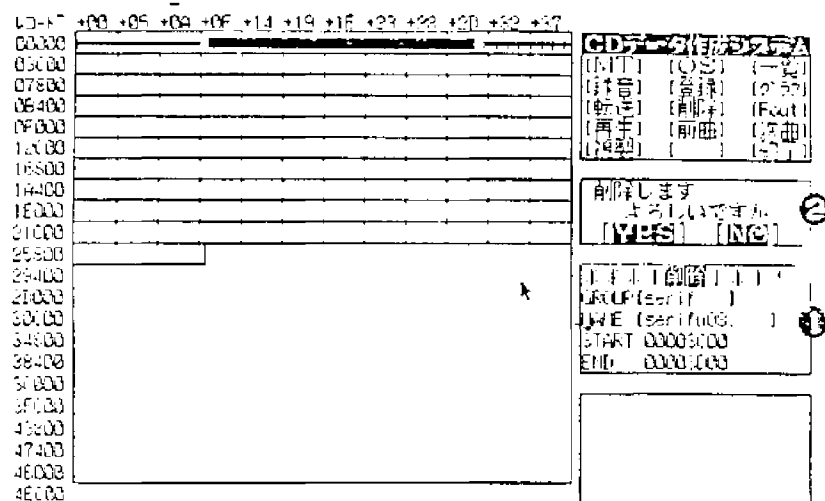
- The the same as for saving, decide a source START, END, and a destination START.
- Check the source contents of the transfer by clicking "Playback" with the left button.
- Click "Execute" with the left button to transfer.

If "Cancel" is selected, it will terminate automatically.



4.8.8 Delete

This is to completely delete the last file on a hard disk. It can only delete the end file. The display will be as follows and area (1) indicates group, name, start record, and end record, and area (2) confirms your command. Select "Yes" to delete, "No" to cancel. If "Yes" is selected, the file will be deleted and this command will end.



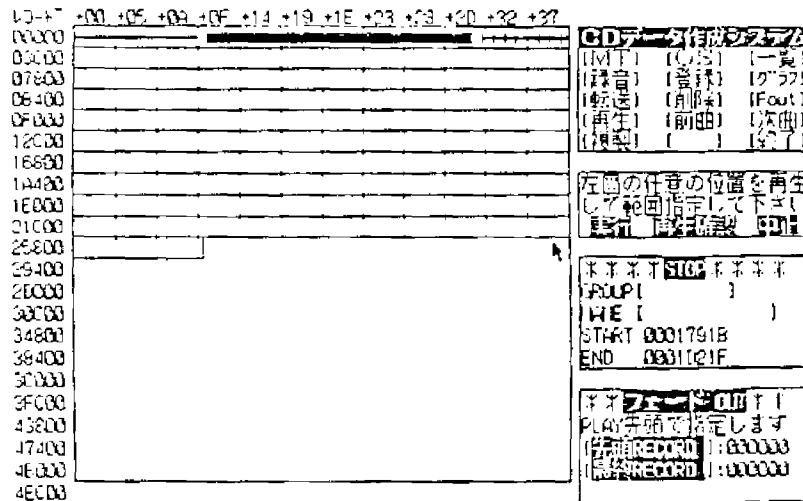
4.8.9 Fout

This is to fade out the linear PCM data on a hard disk. It reduces the play by 1 second less than what was specified. The last one second become 0 data, therefore, if play is less than 1 second, this does not function.

1. Operation procedure

- The same as for saving, decide the starting record and the ending record by play top location specification.
- Click "Play Check" with the left button and check the contents to fade out.
- Click "Execute" with left button to fade out.

If "Cancel" is selected, it will terminate automatically.



4.8.10 End

This is to end HDMUSIC. If "End" is clicked with the left button, HDMUSIC will end and return to the MS-DOS shell.

Application Method of This Command

1. Click (14) with the left button and specify a path name you want to return to.
2. Use (2) to (10) to specify files you want to return to MS-DOS.
3. Click (13) with the left button to return to MS-DOS.

About HD file item list

MD	Three file modes: D: Data A: Audio *: Delete file
GROUP	Group name
NAME	File name
EXT	Extension
File length	Number of valid bytes of a file
Y-M-S	Date when a file is saved
HH:MM:SS	Time when a file is saved
Starting record	Starting record number of a file on HD
No. of record	Number of records in files on HD

If (11) is clicked with the left button, the MS-DOS file list will be displayed, and files can be transferred between the MS-DOS file and CD contents. The following display will appear.

OS ファイル一覧

ID	GROUP	NAME	EXT	7>4長	年-月-日	時:分:秒	先頭ID	1" 13" 1" 5"
0		BIOSSH	H	3264	88-03-13	19:27:46	4000000	4000000
0		BACK	.S	3707	88-03-05	16:22:48	4000000	4000000
0		SCORSET	.S	11297	88-06-02	15:53:58	4000000	4000000
0		KEY	.TEL	1514	88-09-06	20:39:34	4000000	4000000
0		AUTOEXEC.BAT		19	88-09-03	11:17:42	4000000	4000000
0		CEENU	.MAP	16377	88-03-04	11:31:09	4000000	4000000
0		CEENU	.LTX	25104	88-03-04	11:31:06	4000000	4000000
0		COMMAND.COM		24101	87-10-23	00:00:02	4000000	4000000
0		CONFIG.SYS		140	88-09-13	12:00:42	4000000	4000000
0		PICINDX	.BIN	9213	88-09-16	12:26:58	4000000	4000000

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Specified MS-DOS files can be transferred to CD contents one by one.

Each area has the following function:

1. File list is displayed. Can be selected by direct clicking.
2. Indicates the currently selected file.
3. Displays a file list two screens before.
4. Displays a file list one screen before.
5. Select the previous file. If top, displays a listing of proceeding files.
6. Select the next file. If end, displays a listing of the next files.
7. Displays one screen after.
8. Displays two screens after.
9. Display the first file.
10. Display the end file.
11. Switches HD list and OS list.
12. Deletes the specified file.
13. Saves the currently selected file as a HD file.
14. Changes the selected files. MS-DOS wild cards can be used.
15. Ends OS command and returns to the initial screen state.
16. Message such as "Check" are displayed.
17. Displays the selected file.

4.8.12 List

This is to edit files saved in CD Contents. The following display will appear when this command is selected.

ID	GROUP	NAME	EXT	ファイル長	年-月-日	時:分:秒	先頭ID	13-1	13-2	13-3
1		ALPCM83	.BIN	65536	88-03-04	18:02:32	\$003FE2	\$00002	0	(再生) Playback
0		ALPCM84	.BIN	65536	88-03-04	18:02:33	\$003FE2	\$00003	1	(削除) Delete
0		ALPCM85	.BIN	65536	88-03-04	18:02:33	\$003FE2	\$00004	2	(復活) A/O Set
0		ALPCM86	.BIN	65536	88-03-04	18:02:33	\$003FE2	\$00005	3	(変更) Change
0		ALPCM87	.BIN	65536	88-03-04	18:02:33	\$003FE2	\$00006	4	(挿入) Insert
0		ALPCM88	.BIN	65536	88-03-04	18:02:33	\$003FE2	\$00007	5	(消去) Erase
0		ALPCM89	.BIN	65536	88-03-04	18:02:33	\$003FE2	\$00008	6	(音量) Volume
0	SYSTEM	POSTGRP	.4S	61440	88-03-08	17:15:32	\$003332	\$00009	7	(検索) Search
0	Serial	Serial01		186263	88-03-15	23:25:32	\$0031AE	\$00010	8	(終了) End
0	Serial	Serial02		59727	88-03-15	23:36:30	\$003507	\$00011	9	
0	Serial	Serial03		20318	88-03-15	23:27:42	\$0034C0	\$00012	10	
0	Serial	Serial04		200704	88-03-15	23:23:43	\$003569	\$00013	11	
0	Serial	Serial05		60536	88-03-15	23:30:50	\$003712	\$00014	12	
0	Serial	Serial06		153744	88-03-15	23:31:52	\$003828	\$00015	13	
0	Serial	Serial07		502496	88-03-15	23:33:10	\$0038C4	\$00016	14	
0	Serial	Serial08		4510176	88-03-15	23:35:54	\$00381B	\$00017	15	
0	Serial	Serial09		7217344	88-03-15	23:38:28	\$0043C1	\$00018	16	
0	Serial	Serial10		1572304	88-03-15	23:32:53	\$0043EF	\$00019	17	
0	Serial	Serial11		2007040	88-03-15	23:35:30	\$004EEF	\$00020	18	
0	Serial	Serial12		552104	88-03-15	23:57:14	\$004F93	\$00021	19	

This is the file list saved in CD Contents. Each area has the following function:

- File list is displayed. Can be selected by direct clicking.
- Indicates the currently selected file.
- Displays the file list two screens before.
- Displays the file list one screen before.
- Select the previous one file. If top, displays a listing of proceeding files.
- Select the next one file. If end, displays a listing of the next files.
- Displays one screen after.
- Displays two screens after.
- Display the first file.
- Display the end file.
- Command.
 - (Playback) Playback a file to select.
 - (Delete) Put a delete mark on the selected file. Actual data is not deleted.
 - (Change) Change the selected file name and group name.
After the following questions, type in the new information.
GROUP ?
NAME ?
EXT ?
 - (Insert) Insert the last file in front of the specified file.
 - (Erase) Erase the specified file and reorganize the files.
 - (Volume) Adjusts sound volume of the specified file. Use fraction (numerator 0 - 100, denominator 1 - 100 can be specified). If numerator is bigger than the denominator, it will take the biggest or the smallest value.
 - (Search) Displays a file list from the specified file. Inputs are group name, file name, and extension.
 - (End) Ends a file list and returns to the initial screen.

About File List Items

MD	Three file modes: D: Data A: Audio *: Delete file
GROUP	Group name
NAME	File name
EXT	Extension
File length	Number of valid bytes of a file
Y-M-S	Data when a file is saved
HH:MM:SS	Time when a file is saved
Starting record	Starting record number of a file on HD
No. of records	Number of records in files on HD

4.8.13 MT

This is to transfer a file between 8mm MT and a hard disk. Format for 8mm MT is the same as for the back up command, BACKUPEX.EXE. Operations such as changing the order of a 8mm MT back up of another system or returning a part of it to a hard disk are possible. The following display will appear:

HD ファイラー 暫手

ID	GROUP	NAME	EXT	ファイル長	年-月-日	時:分:秒	先頭ID	ID-1	ID-2	ID-3	ID-4	ID-5	ID-6	ID-7	ID-8	ID-9	ID-10	ID-11	ID-12	ID-13	ID-14	ID-15	ID-16	ID-17	ID-18	ID-19	ID-20	ID-21	ID-22	ID-23	ID-24	ID-25	ID-26	ID-27	ID-28	ID-29	ID-30	ID-31	ID-32	ID-33	ID-34	ID-35	ID-36	ID-37	ID-38	ID-39	ID-40	ID-41	ID-42	ID-43	ID-44	ID-45	ID-46	ID-47	ID-48	ID-49	ID-50	ID-51	ID-52	ID-53	ID-54	ID-55	ID-56	ID-57	ID-58	ID-59	ID-60	ID-61	ID-62	ID-63	ID-64	ID-65	ID-66	ID-67	ID-68	ID-69	ID-70	ID-71	ID-72	ID-73	ID-74	ID-75	ID-76	ID-77	ID-78	ID-79	ID-80	ID-81	ID-82	ID-83	ID-84	ID-85	ID-86	ID-87	ID-88	ID-89	ID-90	ID-91	ID-92	ID-93	ID-94	ID-95	ID-96	ID-97	ID-98	ID-99	ID-100	ID-101	ID-102	ID-103	ID-104	ID-105	ID-106	ID-107	ID-108	ID-109	ID-110	ID-111	ID-112	ID-113	ID-114	ID-115	ID-116	ID-117	ID-118	ID-119	ID-120	ID-121	ID-122	ID-123	ID-124	ID-125	ID-126	ID-127	ID-128	ID-129	ID-130	ID-131	ID-132	ID-133	ID-134	ID-135	ID-136	ID-137	ID-138	ID-139	ID-140	ID-141	ID-142	ID-143	ID-144	ID-145	ID-146	ID-147	ID-148	ID-149	ID-150	ID-151	ID-152	ID-153	ID-154	ID-155	ID-156	ID-157	ID-158	ID-159	ID-160	ID-161	ID-162	ID-163	ID-164	ID-165	ID-166	ID-167	ID-168	ID-169	ID-170	ID-171	ID-172	ID-173	ID-174	ID-175	ID-176	ID-177	ID-178	ID-179	ID-180	ID-181	ID-182	ID-183	ID-184	ID-185	ID-186	ID-187	ID-188	ID-189	ID-190	ID-191	ID-192	ID-193	ID-194	ID-195	ID-196	ID-197	ID-198	ID-199	ID-200	ID-201	ID-202	ID-203	ID-204	ID-205	ID-206	ID-207	ID-208	ID-209	ID-210	ID-211	ID-212	ID-213	ID-214	ID-215	ID-216	ID-217	ID-218	ID-219	ID-220	ID-221	ID-222	ID-223	ID-224	ID-225	ID-226	ID-227	ID-228	ID-229	ID-230	ID-231	ID-232	ID-233	ID-234	ID-235	ID-236	ID-237	ID-238	ID-239	ID-240	ID-241	ID-242	ID-243	ID-244	ID-245	ID-246	ID-247	ID-248	ID-249	ID-250	ID-251	ID-252	ID-253	ID-254	ID-255	ID-256	ID-257	ID-258	ID-259	ID-260	ID-261	ID-262	ID-263	ID-264	ID-265	ID-266	ID-267	ID-268	ID-269	ID-270	ID-271	ID-272	ID-273	ID-274	ID-275	ID-276	ID-277	ID-278	ID-279	ID-280	ID-281	ID-282	ID-283	ID-284	ID-285	ID-286	ID-287	ID-288	ID-289	ID-290	ID-291	ID-292	ID-293	ID-294	ID-295	ID-296	ID-297	ID-298	ID-299	ID-300	ID-301	ID-302	ID-303	ID-304	ID-305	ID-306	ID-307	ID-308	ID-309	ID-310	ID-311	ID-312	ID-313	ID-314	ID-315	ID-316	ID-317	ID-318	ID-319	ID-320	ID-321	ID-322	ID-323	ID-324	ID-325	ID-326	ID-327	ID-328	ID-329	ID-330	ID-331	ID-332	ID-333	ID-334	ID-335	ID-336	ID-337	ID-338	ID-339	ID-340	ID-341	ID-342	ID-343	ID-344	ID-345	ID-346	ID-347	ID-348	ID-349	ID-350	ID-351	ID-352	ID-353	ID-354	ID-355	ID-356	ID-357	ID-358	ID-359	ID-360	ID-361	ID-362	ID-363	ID-364	ID-365	ID-366	ID-367	ID-368	ID-369	ID-370	ID-371	ID-372	ID-373	ID-374	ID-375	ID-376	ID-377	ID-378	ID-379	ID-380	ID-381	ID-382	ID-383	ID-384	ID-385	ID-386	ID-387	ID-388	ID-389	ID-390	ID-391	ID-392	ID-393	ID-394	ID-395	ID-396	ID-397	ID-398	ID-399	ID-400	ID-401	ID-402	ID-403	ID-404	ID-405	ID-406	ID-407	ID-408	ID-409	ID-410	ID-411	ID-412	ID-413	ID-414	ID-415	ID-416	ID-417	ID-418	ID-419	ID-420	ID-421	ID-422	ID-423	ID-424	ID-425	ID-426	ID-427	ID-428	ID-429	ID-430	ID-431	ID-432	ID-433	ID-434	ID-435	ID-436	ID-437	ID-438	ID-439	ID-440	ID-441	ID-442	ID-443	ID-444	ID-445	ID-446	ID-447	ID-448	ID-449	ID-450	ID-451	ID-452	ID-453	ID-454	ID-455	ID-456	ID-457	ID-458	ID-459	ID-460	ID-461	ID-462	ID-463	ID-464	ID-465	ID-466	ID-467	ID-468	ID-469	ID-470	ID-471	ID-472	ID-473	ID-474	ID-475	ID-476	ID-477	ID-478	ID-479	ID-480	ID-481	ID-482	ID-483	ID-484	ID-485	ID-486	ID-487	ID-488	ID-489	ID-490	ID-491	ID-492	ID-493	ID-494	ID-495	ID-496	ID-497	ID-498	ID-499	ID-500	ID-501	ID-502	ID-503	ID-504	ID-505	ID-506	ID-507	ID-508	ID-509	ID-510	ID-511	ID-512	ID-513	ID-514	ID-515	ID-516	ID-517	ID-518	ID-519	ID-520	ID-521	ID-522	ID-523	ID-524	ID-525	ID-526	ID-527	ID-528	ID-529	ID-530	ID-531	ID-532	ID-533	ID-534	ID-535	ID-536	ID-537	ID-538	ID-539	ID-540	ID-541	ID-542	ID-543	ID-544	ID-545	ID-546	ID-547	ID-548	ID-549	ID-550	ID-551	ID-552	ID-553	ID-554	ID-555	ID-556	ID-557	ID-558	ID-559	ID-560	ID-561	ID-562	ID-563	ID-564	ID-565	ID-566	ID-567	ID-568	ID-569	ID-570	ID-571	ID-572	ID-573	ID-574	ID-575	ID-576	ID-577	ID-578	ID-579	ID-580	ID-581	ID-582	ID-583	ID-584	ID-585	ID-586	ID-587	ID-588	ID-589	ID-590	ID-591	ID-592	ID-593	ID-594	ID-595	ID-596	ID-597	ID-598	ID-599	ID-600	ID-601	ID-602	ID-603	ID-604	ID-605	ID-606	ID-607	ID-608	ID-609	ID-610	ID-611	ID-612	ID-613	ID-614	ID-615	ID-616	ID-617	ID-618	ID-619	ID-620	ID-621	ID-622	ID-623	ID-624	ID-625	ID-626	ID-627	ID-628	ID-629	ID-630	ID-631	ID-632	ID-633	ID-634	ID-635	ID-636	ID-637	ID-638	ID-639	ID-640	ID-641	ID-642	ID-643	ID-644	ID-645	ID-646	ID-647	ID-648	ID-649	ID-650	ID-651	ID-652	ID-653	ID-654	ID-655	ID-656	ID-657	ID-658	ID-659	ID-660	ID-661	ID-662	ID-663	ID-664	ID-665	ID-666	ID-667	ID-668	ID-669	ID-670	ID-671	ID-672	ID-673	ID-674	ID-675	ID-676	ID-677	ID-678	ID-679	ID-680	ID-681	ID-682	ID-683	ID-684	ID-685	ID-686	ID-687	ID-688	ID-689	ID-690	ID-691	ID-692	ID-693	ID-694	ID-695	ID-696	ID-697	ID-698	ID-699	ID-700	ID-701	ID-702	ID-703	ID-704	ID-705	ID-706	ID-707	ID-708	ID-709	ID-710	ID-711	ID-712	ID-713	ID-714	ID-715	ID-716	ID-717	ID-718	ID-719	ID-720	ID-721	ID-722	ID-723	ID-724	ID-725	ID-726	ID-727	ID-728	ID-729	ID-730	ID-731	ID-732	ID-733	ID-734	ID-735	ID-736	ID-737	ID-738	ID-739	ID-740	ID-741	ID-742	ID-743	ID-744	ID-745	ID-746	ID-747	ID-748	ID-749	ID-750	ID-751	ID-752	ID-753	ID-754	ID-755	ID-756	ID-757	ID-758	ID-759	ID-760	ID-761	ID-762	ID-763	ID-764	ID-765	ID-766	ID-767	ID-768	ID-769	ID-770	ID-771	ID-772	ID-773	ID-774	ID-775	ID-776	ID-777	ID-778	ID-779	ID-780	ID-781	ID-782	ID-783	ID-784	ID-785	ID-786	ID-787	ID-788	ID-789	ID-790	ID-791	ID-792	ID-793	ID-794	ID-795	ID-796	ID-797	ID-798	ID-799	ID-800	ID-801	ID-802	ID-803	ID-804	ID-805	ID-806	ID-807	ID-808	ID-809	ID-810	ID-811	ID-812	ID-813	ID-814	ID-815	ID-816	ID-817	ID-818	ID-819	ID-820	ID-821	ID-822	ID-823	ID-824	ID-825	ID-826	ID-827	ID-828	ID-829	ID-830	ID-831	ID-832	ID-833	ID-834	ID-835	ID-836	ID-837	ID-838	ID-839	ID-840	ID-841	ID-842	ID-843	ID-844	ID-845	ID-846	ID-847	ID-848	ID-849	ID-850	ID-851	ID-852	ID-853	ID-854	ID-855	ID-856	ID-857	ID-858	ID-859	ID-860	ID-861	ID-862	ID-863	ID-864	ID-865	ID-866	ID-867	ID-868	ID-869	ID-870	ID-871	ID-872	ID-873	ID-874	ID-875	ID-876	ID-877	ID-878	ID-879	ID-880	ID-881	ID-882	ID-883	ID-884	ID-885	ID-886	ID-887	ID-888	ID-889	ID-890	ID-891	ID-892	ID-893	ID-894	ID-895	ID-896	ID-897	ID-898	ID-899	ID-900	ID-901	ID-902	ID-903	ID-904	ID-905	ID-906	ID-907	ID-908	ID-909	ID-910	ID-911	ID-912	ID-913	ID-914	ID-915	ID-916	ID-917	ID-918	ID-919	ID-920	ID-921	ID-922	ID-923	ID-924	ID-925	ID-926	ID-927	ID-928	ID-929	ID-930	ID-931	ID-932	ID-933	ID-934	ID-935	ID-936	ID-937	ID-938	ID-939	ID-940	ID-941	ID-942	ID-943	ID-944	ID-945	ID-946	ID-947	ID-948	ID-949	ID-950	ID-951	ID-952	ID-953	ID-954	ID-955	ID-956	ID-957	ID-958	ID-959	ID-960	ID-961	ID-962	ID-963	ID-964	ID-965	ID-966	ID-967	ID-968	ID-969	ID-970	ID-971	ID-972	ID-973	ID-974	ID-975	ID-976	ID-977	ID-978	ID-979	ID-980	ID-981	ID-982	ID-983	ID-984	ID-985	ID-986	ID-987	ID-988	ID-989	ID-990	ID-991	ID-992	ID-993	ID-994	ID-995	ID-996	ID-997	ID-998	ID-999	ID-1000	ID-1001	ID-1002	ID-1003	ID-1004	ID-1005	ID-1006	ID-1007	ID-1008	ID-1009	ID-1010	ID-1011	ID-1012	ID-1013	ID-1014	ID-1015	ID-1016	ID-1017	ID-1018	ID-1019	ID-1020	ID-1021	ID-1022	ID-1023	ID-1024	ID-1025	ID-1026	ID-1027	ID-1028	ID-1029	ID-1030	ID-1031	ID-1032	ID-1033	ID-1034	ID-1035	ID-1036	ID-1037	ID-1038	ID-1039	ID-1040	ID-1041	ID-1042	ID-1043	ID-1044	ID-1045	ID-1046	ID-1047	ID-1048	ID-1049	ID-1050	ID-1051	ID-1052	ID-1053	ID-1054	ID-1055	ID-1056	ID-1057	ID-1058	ID-1059	ID-1060	ID-1061	ID-1062	ID-1063	ID-1064	ID-1065	ID-1066	ID-1067	ID-1068	ID-1069	ID-1070	ID-1071	ID-1072	ID-1073	ID-1074	ID-1075	ID-1076	ID-1077	ID-1078	ID-1079	ID-1080	ID-1081	ID-1082	ID-1083	ID-1084	ID-1085	ID-1086	ID-1087	ID-1088	ID-1089	ID-1090	ID-1091	ID-1092	ID-1093	ID-1094	ID-1095	ID-1096	ID-1097	ID-1098	ID-1099	ID-1100	ID-1101	ID-1102	ID-1103	ID-1104	ID-1105	ID-1106	ID-1107	ID-1108	ID-1109	ID-1110	ID-1111	ID-1112	ID-1113	ID-1114	ID-1115	ID-1116	ID-1117	ID-1118	ID-1119	ID-1120	ID-1121	ID-1122	ID-1123	ID-1124	ID-1125	ID-1126	ID-1127	ID-1128	ID-1129	ID-1130	ID-1131	ID-1132	ID-1133	ID-1134	ID-1135	ID-1136	ID-1137	ID-1138	ID-1139	ID-1140	ID-1141	ID-1142	ID-1143	ID-1144	ID-1145	ID-1146	ID-1147	ID-1148	ID-1149	ID-1150	ID-1151	ID-1152	ID-1153	ID-1154	ID-1155	ID-1156	ID-1157	ID-1158	ID-1159	ID-1160	ID-1161	ID-1162	ID-1163	ID-1164	ID-1165	ID-1166	ID-1167	ID-1168	ID-1169	ID-1170	ID-1171	ID-1172	ID-1173	ID-1174	ID-1175	ID-1176	ID-1177	ID-1178	ID-1179	ID-1180	ID-1181	ID-1182	ID-1183	ID-1184	ID-1185	ID-1186	ID-1187	ID-1188	ID-1189	ID-1190	ID-1191	ID-1192	ID-1193	ID-1194
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Operation

Application Method of This Command

1. Click (17) with the left button to open the 8mm MT door.
2. Set the 8mm MT and close the door.
3. Click (14) with the left button to initialize MT.
4. Specify a file to back up to 8mm MT by using (2) to (10).
5. Click (13) with the left button to back up to the 8mm MT.

About HD file list item

MD	Three file modes: D: Data A: Audio *: Delete file
GROUP	Group name
NAME	File name
EXT	Extension
File length	Number of valid bytes of a file
Y-M-S	Data when a file is saved
HH:MM:SS	Time when a file is saved
Starting record	Starting record number of a file on HD
No. of records	Number of records in files on HD

If the MT list (11) is clicked with the left button, the "Creating MT list" message will appear at (16) and starts reading 8mm. Once data starts coming into the 8mm MT, the following display will appear to list 8mm MT. Files can be transferred between 8mm MT and CD Contents.

MT ファイル一覧

ID	GROUP	NAME	EXT	ファイル長	年-月-日	時:分:秒	先頭2-1	13-1	14-1
0		ADPCM193	.BIN	65536	88-08-04	18:02:58	4003F82	4000024	
0		ADPCM194	.BIN	65536	88-08-04	18:02:58	4003F82	4000024	
0		ADPCM195	.BIN	65536	88-08-04	18:02:58	4003F82	4000024	
0		ADPCM196	.BIN	65536	88-08-04	18:02:58	4003F82	4000024	
0		ADPCM197	.BIN	65536	88-08-04	18:02:58	4003F82	4000024	
0		ADPCM198	.BIN	65536	88-08-04	18:02:58	4003F82	4000024	
0		ADPCM199	.BIN	65536	88-08-04	18:02:58	4003F82	4000024	
1	SYSTEM	POSTLOG	.48	614400	88-08-08	17:15:32	4003052	4000000	
1	serif	serifu01		126568	88-09-15	23:25:32	400314E	4000000	
1	serif	serifu02		59360	88-09-15	23:26:30	4003307	4000000	
1	serif	serifu03		200704	88-09-15	23:27:42	4003460	4000000	
1	serif	serifu04		200704	88-09-15	23:28:48	4003568	4000000	
1	serif	serifu05		65536	88-09-15	23:30:50	4003712	4000000	
1	serif	serifu06		150744	88-09-15	23:31:52	4003868	4000000	
1	serif	serifu07		56246	88-09-15	23:33:10	4003904	4000000	
1	serif	serifu08		4520176	88-09-15	23:35:54	4003810	4000000	
1	serif	serifu09		2617344	88-09-15	23:50:28	4004301	4000000	
1	serif	serifu10		1572604	88-09-15	23:52:52	400436F	4000000	
1	serif	serifu11		2007040	88-09-15	23:55:30	400466F	4000000	
1	serif	serifu12		559104	88-09-15	23:57:14	4004F93	4000000	

If 8mm MT is not set, this results in an error. Always set it in advance.

Note: It takes a long time to create a 8mm MT list.

Each area has the following function:

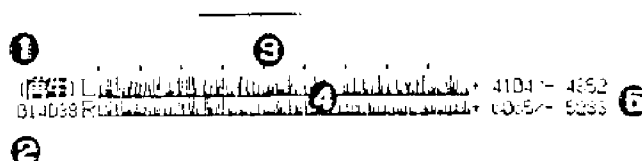
1. Displays a file list. Can be selected by direct clicking.
2. Indicates the currently selected file.
3. Displays the file list two screens before.
4. Displays the file list one screen before.
5. Selects the previous one file. If top, displays a listing of proceeding files.
6. Selects the next one file. If end, displays a listing of the next files.
7. Displays one screen after.
8. Displays two screens after.
9. Displays the first file.
10. Displays the end file.
11. Switches HD list and OS list.
12. Deletes the specified file.
13. Save the currently selected file as a HD file.
14. Initializes the Hu7 CD Contents Hard Disk (initialize control file only).
15. Ends the MT command and returns to the initial screen state.
16. Displays messages such as "Check" here.
17. Exchange 8mm MT. Do not use the eject button on the Hu7 CD Contents Hard Disk Unit to exchange 8mm MT. Always click MT exchange with the left button.

About MT file list items

MD	Three file modes: D: Data A: Audio *: Delete file
GROUP	Group name
NAME	File name
EXT	Extension
File length	Number of valid bytes of a file
Y-M-S	Data when a file is saved
HH:MM:SS	Time when a file is saved
Starting record	Starting record number of a file on HD
No. of records	Number of records in files on HD

4.2 Plain Graph

The plain graph mode is used to specify a record number in detail when you save or transfer files. A plain graph will appear if the plain graph display area (lower MS-DOS area) is clicked with the left button during playback. The display looks like this:



Each area has the following function:

1. Left click will start playback from record number at (2). During playback this plain graph disappears but it will reappear from the currently playing record number if (1) and (2) are clicked with the left button.
2. Displays the left end record number of the currently displaying plain graph. Left clicking this will also display 8 records before.
3. Indicates the record partition.
4. Plain graph. Specifies the record for start record if (3) and (4) are clicked with the left button.
5. Indicates the maximum value of the present graph.

If the CD Contents area map is clicked with the left button during plain graph mode, it will display a graph of the location.

ADPCM.EXE

Chapter 5 ADPCM.EXE

5.1 Outline

Playback of ADPCM is possible on the PC engine IFU30. This is to record, playback, edit, and save data for this ADPCM. These process are all done in the MS-DOS current directory. ADPCM is the method to compress a sound signal to 1 sample, 4 bits digital data.

Sampling frequency can be created with this program and data/second and the maximum time played at 64K are as follows:

Sampling frequency	Data/Sec.	Playback time
16 KHz	8000 bytes	8.192 seconds
8 KHz	4000 bytes	16.384 seconds
4 KHz	2000 bytes	32.768 seconds
2 KHz	1000 bytes	65.536 seconds

The following five functions are provided by this program:

1. Sampling frequency setting
A sampling frequency of 16, 8, 4, 2 KHz can be set.
2. Record
Record as ADPCM data. The recorded data is saved as a file. Cut the sound data from the file and save it as a regular file.
3. Playback
Playback the data recorded as ADPCM from any data location.
4. Visualize (Graphic, HEX indication)
It graphicizes ADCPM data for easier understanding. If ADPCM is well understood, HEX indication is possible.
5. Edit
Lists ADPCM data and combines them to make a large file.

5.2 Execution Method

ADPCM.EXE is executed from the MS-DOS command line.

5.3 Format

ADPCM [Option specification] [Edit file names]

5.4 Option

- /D Specifies a mode to edit in HEX data without graphics.
- /N Specifies a mode without graphics nor HEX data. (Used only at recording)
- Indicates how to use this program
- The following display will appear if an option is specified.

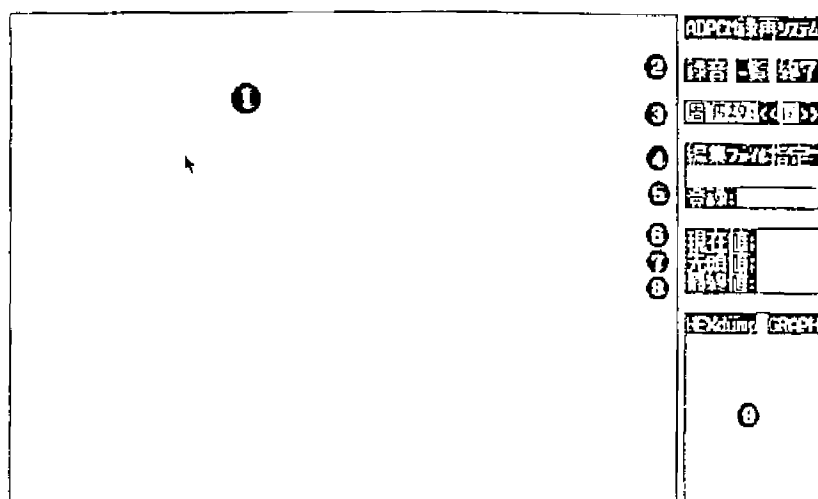
```
ADPCM Version 1.00      Copyright 1988 Hudson soft
使用方法: ADPCM [/オプション] [編集ファイル名]
/D      グラフ表示せずH E Xで編集します。
/N      グラフ表示もH E X表示もしません。
オプション省略はグラフ表示可能モードで、
ファイル名省略は無指定となります。
A D P C Mの録音・再生・編集ツールです。
```

Translation:

Direction: ADPCM [/Option] [Edit file name]
/D Edit at HEX without graphics
/N Do not display graphics nor HEX
An omitted option results in graphic mode. An omitted file name results in no file name. This is a program for recording, playback, and editing.

The graphic mode (at omitted option) will convert ADPCM data to PCM data, and to drawing graphics from the data. The graphic mode enables editing data by looking at the graph. This mode takes time due to graphics. If ADPCM data mechanism is understood, the HEX mode can be used to cut time by specifying the [/D] option. The file name is the file name to be edited first. If specified, you can start editing immediately. If starting from recording, execute without specifying the file name.

The following display will appear if this program is executed without options.



Each area has the following functions:

1. Editable area. Graphic data will be displayed here. If clicked with the left button, ADPCM data will playback from the location.
2. Commands can be used by this program. Mode will change upon clicking the left button.
 - (Record) Record ADPCM
 - (List) Display a file list and execute playback and edit.
 - (End) End the program and return to the MS-DOS command.
3. Sets sampling frequency. To decrease sampling frequency, click "< <" with the left button and to increase, click "> >" with the left button.
4. Specifies a file to edit. Clicking the left button brings a cursor to specify a file.
5. Saves. Execute after a start value (7) and an end value (8) are specified.
6. Indicates the playback start location as a present value.
7. Specifies a value to be used as start value at saving. If clicked with the left button, a present value (6) will be copied.
8. Specifies a value to be used as an end value at saving. If clicked with the left button, a present value (6) will be copied.
9. If the area (1) is too small, it can be magnified. If clicked with the left button, display the magnified record on (6). Clicking the right or left button at this area can make the starting location on the screen move back and forth.

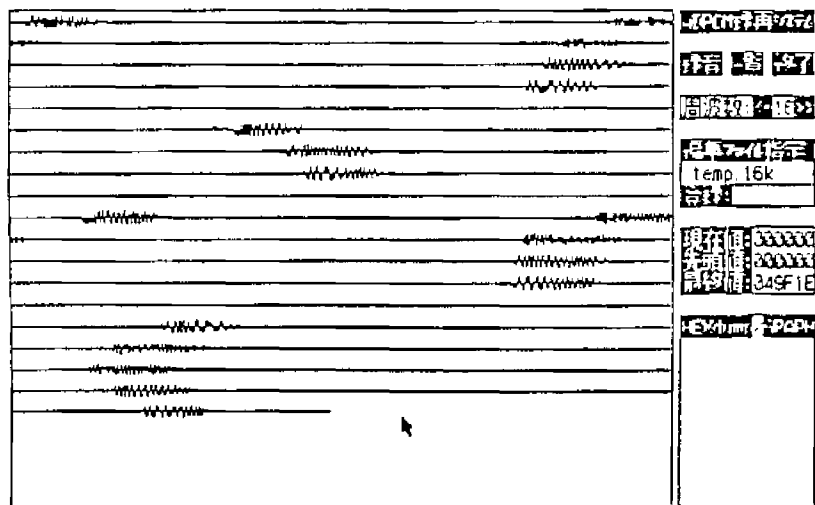
5.5 Recording

Recording procedure is as follows:

1. Live recording.
First, decide what you want to record. Then record it using a cassette tape recorder, etc.
2. Set sampling frequency. Click "<<" or ">>" with the left button to set sampling frequency.
3. Clicking "Record" (2) with the left button will bring up the following indication at area (9), then prepare for recording.

Record in TEMP.??K OK? [YES]/[NO]
(?? is the sampling frequency at the time)

If [Yes] is clicked with the left button, starts recording but areas with no sound will not be recorded. Clicking either left or right button will stop recording. If the level is exceeded during recording due to ADPCM exchange, "Level over" will appear in area (9). Clicking either button of the mouse will create graphs. It will take time for graphs to be displayed in area (1). If graphs are displayed, it will look like the following. If there is a red line, it means that the level is exceeded. If you play this bad data with the actual machine, the sound will be destroyed. Re-record or save the data except for areas with red lines.



5.6 Saving

You can separate and save a portion of data which has already been saved. The procedure is as follows:

1. Specify the location you want to save.

Click the top of the wanted location with the left button to save. You may click with the left button as much as you want until you find exactly the right location. After the right position is found, click with the right button to interrupt playback and specify an end value by clicking with the left button.

2. Save files.

If the right registration range is specified, save it as a file. Click "Register" (5) with the left button. Type the file name on the keyboard.

Using HEX dump and magnifying graphics.

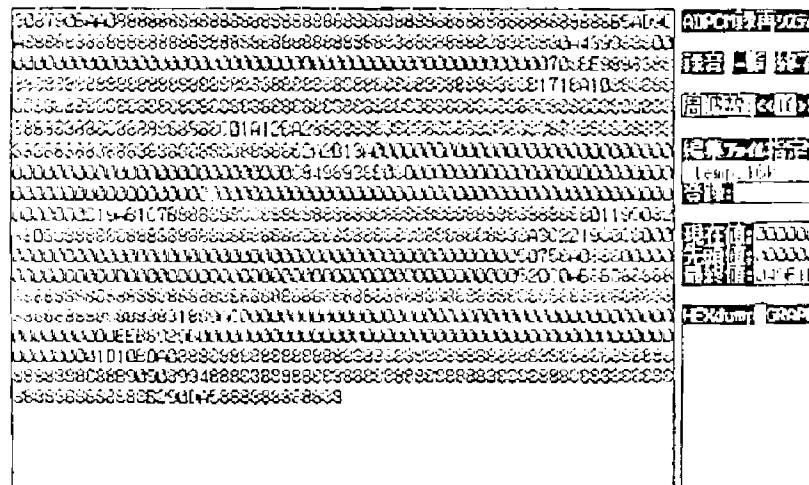
The area (9) can be magnified to see in detail if the right position cannot be specified in the editing area. Click (9) with the left button to bring up wave graphs. BACK is displayed at the left side of this area and NEXT at the right side of the area. Clicking the area with the left button will start displaying 64 samples before or after. Clicking wave form with the left button will display wave graphs. Click HEX dump with the left button from HEX dump/GRAPH will switch to the HEX mode. Mode can be switched at any time by left clicking. However, it cannot be used when the /D option is selected. HEX display will start by left clicking the HEX part.

3. Saving

If the correct file name is input, it will be saved as a MS_DOS file. However, if an extension is not specified, an extension indicating sampling frequency such as 16K, 08K, 04K will be added automatically.

5.7 HEX Mode

Execute a HEX dump without wave graphics, if the /D option is specified. Use this when you understand the ADPCM data format. HEX data will be displayed instead of wave graphics after completion of recording. HEX data will be reduced according to the size of files since it cannot be displayed in the whole edit area. Others do not function specifically. The following screen appears when recording with the /D option.

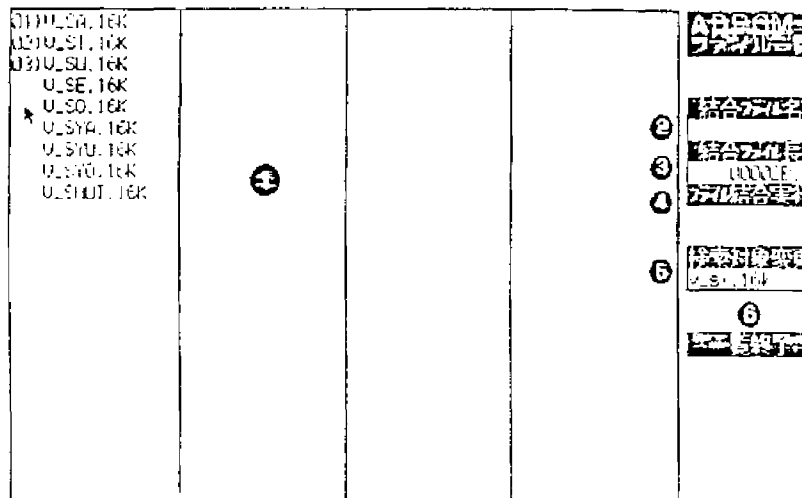


5.8 List

The list mode of ADPCM has the following three functions:

1. Display a list
2. Playback files by unit
3. Combine files
4. Get information of combined files

The following screen will appear if Display list is clicked with the left button.



Each area has the following functions:

1. Total of 91 files can be displayed in the area. (The excess will be cut) The format is three blank spaces, a file name, and extension. The following two functions can be done in this area:
 - a. Playback

Playback ADPCM data by reversing the file name by clicking the file name with the left button. (Sampling frequency will be read automatically by the extension (??K).) Pressing the mouse button will stop it during playback.
 - b. Assign order of combination

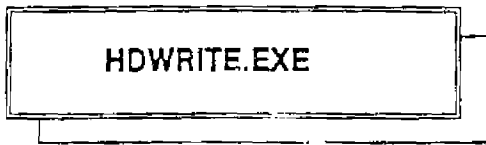
Order of combination can be assigned by clicking on the three letter area of the file name. Another click will erase the order. Erase from a larger number. If the order is assigned, the file length (3) will increase. If erased, the file length will decrease.
2. Input the file names to be combined. Clicking the left button will input file names. You can only specify file names here.

3. Display the file length of combined files in hexadecimal notation. Adjust not to go beyond 10000 bytes since the ADPCM buffer is 64KB. (This program will not warn you if it is over 64KB.)
4. Start combining files by clicking "File combine execute" with the left button. If a file name is not specified, then a window will appear asking for the input file name. The combined files will be output to the specified file and the combined information file will be output to the name specified using .H extension. The contents are as follows:

Example of combined information files

TEST1_BX EQU \$0000	CONTAINED FROM BEGINNING
TEST1_AX EQU \$1023	\$1023 BYTES
TEST1_DH EQU \$0E	FREQUENCY 16K
TEST2_BX EQU \$1023	CONTAINED FROM ADDRESS \$1023
TEST2_AX EQU \$0800	\$800 BYTES
TEST2_DH EQU \$0C	FREQUENCY 8K

5. To specify file names to be listed, click "change selection" with the left button. Use wild card characters * and ? to specify.
6. To return to the main menu, click "list end" with the left button.



Chapter 6. HDWRITE.EXE

6.1 Outline

This is to save additional MS-DOS files to CD Contents or to fetch them. Can be used by MAKE or by batch file since it is a command line type program that does not use a mouse. The following six functions are provided:

1. Save files to CD Contents
2. Update files on CD Contents
3. Fetch files from CD Contents
4. Delete specified file
5. Delete files after a specified file
6. Output a file list

6.2 Execution Method

HDWRITE.EXE is executed from the MS-DOS command line.

6.3 Format

HDWRITE [Option specification] Path name [Group name] { File name}

6.4 Option

- U [M,N] Add and update files. [M] specifies a maximum value for file length. [N] specifies offset in 800H units. A value for both [M] and [N] are contained in 8 digits HEX.
- X Fetch files
- D Put a delete mark on files
- K Delete files after a specified file
- L Output a file list

The following display will appear if HDWRITE is executed without any parameters.

```

HDWRITE Version 1.00 Copyright 1987 Hudson soft
使用法: HDWRITE [スイッチ] パス名 [グループ名] [ラベル名]
-U[M,N] ファイルの追加・更新、[M]は最大値、[N]はオフセット
        16進 8桁のバイト値指定、[N]は800Hの倍数であること
-K      指定ファイル以後を全て削除する
-D      ファイルに削除マークを付ける
-X      ファイルの取り出し
-L      一覧出力

```

Translation:

```

Direction:  HDWRITE [ Switch] Path name [ Group name] [ Label name]
-U[ M,N]    Add or update files. [ M] is a maximum value for the file, [ N]
            is the offset in hex notation specified by an 8 digit value. [ N]
            is a multiple of 800H.
-K          Delete files after a specified file
-D          Put a delete mark on files
-X          Fetch files
-L          Output a file list

```

Each command area has the following meaning:

Path name: MS-DOS drive:Directory*File name.Extension
Wild cards can be specified.

Group name: Consider this as a part of the file name managed by CD Contents. If this is not specified, it is treated as if there is no group specification.

Label name: File name.Extension managed in CD Contents. If this is not specified, the file name (File name. extension) will be used. If a wild card is specified at path name, do not specify a label name. A label name cannot be specified with the -X, -D, or -K options, because a path name equals a file name.extension for CD Contents.

6.5 Directions

We will give an example of actual use.

To save a new file to CD Contents

Name a MS-DOS file with group name [TEST] and save it under the name of [TEST.BIN].

```
E>HDWRITE TEST.BIN TEST
HDWRITE Version 1.00 Copyright 1987 Hudson soft
WRITE:D TEST TEST .BIN 17137 88-07-11 16:47:28 $001000 $000009
```

If a file [TEST.BIN] of [TEST] has already been saved and its volume is equal to or smaller than the previous version, update the file. If the volume becomes larger, a delete mark will be placed at the old location and it will be added in at the end location. If it is a new file, add it at the end location. To write a new file (especially program or character data, etc. which is likely to change), save the maximum volume using the U option so that there will be no need to change it later.

To fetch a file from CD Contents

Return a file in CD Contents called [TEST.BIN] and group name [TEST] to a MS-DOS file [TEST.BIN] under the current directory.

```
E>HDWRITE -X TEST.BIN TEST
HDWRITE Version 1.00 Copyright 1987 Hudson soft
READ:D TEST TEST .BIN 17137 88-07-11 16:47:28 $001000 $000009
```

To delete the specified file

Assume that the CD Contents file [TEST.BIN] and the group name [TEST] have been deleted.

```
E>HDWRITE -D TEST.BIN TEST
HDWRITE Version 1.00 Copyright 1987 Hudson soft
DELETE:D TEST TEST.BIN 17137 88-07-11 16:47:28 $001000 $000009
```

To delete files after the specified file

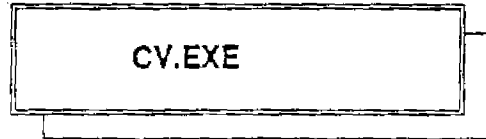
Delete all files after the CD Contents file (TEST.BIN), group name (TEST).

```
E>HDWRITE -K TEST.BIN TEST
HDWRITE Version 1.00 Copyright 1987 Hudson soft
KILL:D TEST TEST.BIN 17137 88-07-11 16:47:28 $001000 $000009
Delete following files. OK(Y) ?Y
Deleted
```

Nothing will happen if a key other than Y is pressed.

To list files

```
E>HDWRITE -L
HDWRITE Version 1.00 Copyright 1987 Hudson soft
MD_GROUP_NAME_.EXT BYTES YY/MM/DD HH:MM:SS RECORD LENGTH
A CD_ROM MESSAGE. 7913472 88-02-24 18:57:02 $000000 $000F18
* SYSTEM PRE_GAP.3S 475136 88-02-04 02:02:48 $000F18 $0000E8
D TEST TEST.BIN 17137 88-07-11 16:47:28 $001000 $000009
D TEST HS1.CG 29696 88-06-04 15:12:32 $001009 $00000F
D TEST HS2.CG 29696 88-06-04 15:12:34 $001018 $00000F
D TEST AMEO.CG 29696 88-06-04 15:12:34 $001027 $00000F
MD_GROUP_NAME_.EXT BYTES YY/MM/DD HH:MM:SS RECORD LENGTH
```



Chapter 7 CV.EXE

7.1 Outline

This is to convert [.MX] / [.BX] files created by AS/LK to CDROM data image files. Use this converter to make binary files for program files and write the files to CD Contents by using HDWRITE or HDMUSIC.

7.2 Execution Method

CV.EXE is executed from the MS-DOS command line.

7.3 Format

CV Input file name Output file name

7.4 Options

No options available

7.5 Directions

The following direction will be displayed if input and output file names are not specified before execution.

```
E>CV
binary file converter Ver 1.00 copyright 1988 Hudson soft
Usage: cv in_file out_file
```

The in_file is a [.MX] / [.BX] file name output by AS/LK, and out_file is a binary file name for CD ROM.

Example. To convert DSP.MX to DSP.BIN

```
E>CV DSP.MX DSP.BIN
binary file converter Ver 1.00 copyright 1988 Hudson soft
address = 00004000 length = 02e0
```

INFGET.EXE

Chapter 8. INFGET.EXE

8.1 Outline

This is to output file information saved in CD Contents as a EQU file that corresponds to the program. It can be redirected to create files to send to standard output.

8.2 Execution Method

INFGT.EXE is executed from the MS-DOS command line.

8.3 Format

INFGET [Option]

8.4 Options

- A Data record also repeats absolute record from a start
- E Extension is also a part of the label name
- G Group name is also a part of the label name
- Displays directions

```
E>INFGET--
Directions : INFGET - switch character
Write CD system control information to standard text
-A Data record repeats absolute record from start.
-E Extension is also a part of label name.
-G A group name is also a part of label name.
```

Output format is as follows:

Label name _	SM EQU	Start specification of music at label name	(Minutes)	BCD data
Label name _	SS EQU	Start specification of music at label name	(Seconds)	BCD data
Label name _	SF EQU	Start specification of music at label name	(Frame)	BCD data
Label name _	EM EQU	End specification of music at label name	(Minutes)	BCD data
Label name _	ES EQU	End specification of music at label name	(Seconds)	BCD data
Label name _	EF EQU	End specification of music at label name	(Frame)	BCD data
Label name _	HI EQU	Most significant byte of start record of the data at label name		
Label name _	LW EQU	Least significant 2 bytes of start record of the data at label name		
Label name _	LN EQU	Length of data is given in 2 bytes at label name *		
Label name _	RL EQU	Least significant 2 bytes of the number of records is given at label name *		
Label name _	RH EQU	Most significant byte of the number of records is given at label name *		

* Output only more than 64K record.

8.5 Directions

This command is usually used with the output redirected to files.

```
A>INFGET >TEST.H
(TEST.H CONTENTS)
;TRACK NO.=01
;88-02-24      18:57:02      CD_ROM_MESSAGE.
MESSAGE_SM EQU $00
MESSAGE_SS EQU $02
MESSAGE_SF EQU $00
MESSAGE_EM EQU $00
MESSAGE_ES EQU $46
MESSAGE_EF EQU $65
;TRACK NO.=02
;88-09-05      01:34:26      SYSTEM_HUDSON.IPL
HUDSON_HI EQU $00
HUDSON_LW EQU $0000
HUDSON_RL EQU $0001
HUDSON_LN EQU $0800
;88-09-22      23:44:28      _IPL.INF
IPL_HI EQU $00
IPL_LW EQU $0001
IPL_RL EQU $0001
IPL_LN EQU $0080
```

CDEMUL.EXE

Chapter 9. CDEMUL.EXE

9.1 Outline

This substitutes for the CD-ROM drive by interpreting the CD-ROM command which is sent from Hu7 through parallel I/O connected to the Hu7 system. Pressing the ESC key will return to the command line.

9.2 Execution Method

CDEMUL.EXE is executed from the MS-DOS command line.

9.3 Format

CDEMUL { Option }

9.4 Options

- A Execute player simulation
- D Display output command and monitor the output commands
- Q Return other than PLAY-STATUS by SUB-Q sense
- S Emulation without emulating SEEK TIME
- Display directions

```
PC ENGINE CDROM DRIVE EMULATOR VERSION 1.00
Direction: CDEMUL Option
           A      All audio tracks
           D      Display the command sent
           Q      Return other than PLAY-STATUS by SUB-Q sense
           S      Do not emulate SEEK TIME
```

9.5 Directions

We will give an example of actual use.

To simulate player

CDEMUL A

Execute with the A option. Player simulation will be executed and will be displayed from the PC engine side. Used to check music.

To monitor a command

CDEMUL D

Execute with the D option. It will monitor a command sent from the PC engine. Display as follows:

```
A>CDEMUL D
PC ENGINE CDROM DRIVE EMULATOR VERSION 1.00
Start CD emulation
(use EXC key to stop)
TEST UN.  READY00 00 00 00 00 00 s00m
READ TOC    DE 00 00 00 00 00 00 00 00 00 00 01020000s00m
READ TOC    DE 01 00 00 00 00 00 00 00 00 00 00592500s00m
READ TOC    DE 02 02 00 00 00 00 00 00 00 00 00564604s00m
DATA READ   08 00 10 00 01 00 s00m
DATA READ   08 00 10 00 10 00 s00m
DATA READ   08 00 2C F8 01 00 s00m
```

The D option can be turned on/off by hitting "D" on the keyboard.

When a program to run requires ATIME

CDEMUL Q

Execute with the Q option. If the emulation program is run without this option, SUB-Q sense will not return ATIME status. Specify it when you want to run a program to look at ATIME, etc. using SUB-Q sense.

Do not emulate during CD seek time

CDEMUL S

Execute with the S option. This option does not perform during CD-seek-time, therefore, debug time will be shortened.

To end simulation

Press the ESC key to end emulation.

BACKUPEX.EXE

Chapter 10. BACKUPEX.EXE

10.1 Outline

This is to record CD Contents to 8mm MT. File control information is also recorded to the backup. A tape that is baked up by this program is used as a master.

10.2 Execution Method

BACKUPEX.EXE is executed from the MS-DOS command line.

10.3 Format

BACKUPEX Comment

10.4 Options

No options available

The following directions will be displayed if executed without any comments.

```
A>BACKUPEX
BACKUP EXA Version 1.00 Copyright 1987 Hudson soft
Directions : BACKUPEX REM
              Backup to 8mm MT according to CD_DOC.DIR
              information.
```

Example (Backup to 8mm MT with the name such as SAMPLE PROGRAM.)

```
A>BACKUPEX SAMPLE PROGRAM
BACKUP EXA Version 1.00 Copyright 1987 Hudson soft
..... Display a file list
```

VERIFYEX.EXE

Chapter 11. VERIFYEX.EXE

11.1 Outline

This is to compare 8mm MT contents with CD Contents. Always use this program to compare and check a master tape.

11.2 Execution Method

VERIFYEX.EXE is executed from the MS-DOS command line.

11.3 Format

VERIFYEX [File name]

11.4 Options

It will create a file of the verified results if a file name is specified. Print this as a part of master presentation record.

Example

```
A>VERIFYEX
VERIFY EXA Version 1.00 Copyright 1987 Hudson soft
-----
HUDSON CDROM DEVELOPMENT SYSTEM ver 1.00
8mm Backup Method 1
1. This file (256 bytes)
2. HD management file header (32 bytes)
3. Data (4000H*n + 800H*m)
Repeat 2. and 3.
FMK 1 pc.
-----
DATE 88/09/15
TIME 03:58:42
REM DEMO
-----
Compare to HD. OK? (Y)
```

To start comparison, press the Y key. A file list will be displayed. It will be OK unless an error is indicated. Pressing other than the Y key will return to the command line without a comparison.

RESTOREX.EXE

Chapter 12. RESTOREX.EXE

12.1 Outline

This is to return files of the 8mm MT recorded by BACKUPEX.EXE to CD Contents.

12.2 Execution Method

RESTOREX.EXE is executed from the MS-DOS command line.

12.3 Format

RESTORE [Option]

12.4 Options

- I Restores from the start of CD Contents. The present CD Contents will be lost and 8mm MT contents will be stored in its place.
- A Add the 8mm MT contents to the end location of current file management.

The following directions will be displayed if nothing is specified.

```
A>RESTOREX
RESTORE EXA Version 1.00 Copyright 1987 Hudson soft
Direction : RESTOREX - Switch Character
            Restores 8mm MT contents to CD Contents
            -I Restores 8mm MT contents to top of CD Contents
            -A Returns to end location of the current file
               management
```


12.5 Directions

We will give an example of actual use.

To restore 8mm MT contents to CD Contents

RESTORE -I

Execute with the -I option.

```
A>RESTOREX
RESTORE EXA Version 1.00 Copyright 1987 Hudson soft
-----
HUDSON CDROM DEVELOPMENT SYSTEM ver 1.00
8mm Backup Method 1
1. This file (256 bytes,
2. HD management file header (32 bytes)
3. Data (4000H*n + 800H*m)
Repeat 2. and 3.
FMK 1 pc.
-----
DATE 88/09/15
TIME 03:58:42
REM DEMO
-----
Restore to HD. OK? (Y)
```

Pressing other than the Y key will return to the command line.

To add 8mm MT contents to CD Contents

RESTORE -A

Execute with the -A option.

LISTEX.EXE

Chapter 13. LISTEX.EXE

13.1 Outline

This is to display a list of contents of the 8mm MT recorded by using BACKUPEX.EXE, etc.

13.2 Execution Method

LISTEX.EXE is executed from the MS-DOS command line.

13.3 Format

LISTEX

13.4 Options

No options available

Example

```
A> LISTEX
LIST EXA Version 1.00 Copyright 1987 Hudson soft
..... A file list is displayed with the header information
```

MSBACKUP.EXE

Chapter 14. MSBACKUP.EXE

14.1 Outline

This is to backup MS-DOS files to 8mm MT. It can also add, fetch files, and display lists.

14.2 Execution Method

MSBACKUP.EXE is executed from the MS-DOS command line.

14.3 Format

MSBACKUP [Option]

14.4 Options

/I Write a file from the start of the 8mm MT
 /D Do not copy subdirectories and write directories only
 /T (Date) (-Date)
 Write files of the specified day or duration
 /L List 8mm MT files
 /R Restore from 8mm MT to MS-DOS

The following directions will be displayed if options are not specified.

```
MS-DOS 8mm MT BACKUP version 1.00
Directions: MSBACKUP [Switch] file name REM
            Copy MS-DOS files to 8mm MT
            /I E:Y*.*REM      Copy from the start of 8mm MT
            /D                Do not copy subdirectories
            /T[DATE]         Copy between specified dates
                               (88/02/12-88/04/21, today is omitted)
            /L[*PATH]        A 8mm MT file list (/T is valid)
            /R[*PATH]        Restore from 8mm MT to MS-DOS
                               (/T is valid)
```

14.5 Directions

We will give an example of actual use.

To backup all specified drives

```
B>MSBACKUP /I A:W*.*
```

Explanation : Copy all in drive A: (including subdirectories) to 8mm MT.



SFTFMT.EXE

To additionally backup all specified drives

```
B>MSBACKUP B:¥*. *
```

Explanation : Copy additionally all in drive B: (including subdirectories) to 8mm MT.

To display the directory of the specified file

```
B>MSBACKUP /L¥*.ASM
```

Explanation : Display all ASM files in the root directory of the 8mm MT.

To restore the specified file to the specified drive

```
B>MSBACKUP /R¥*.ASM C:¥
```

Explanation : Copy all ASM files in the root directory of the 8mm MT to drive C:¥. The subdirectory will be automatically created.

To backup files of the specified date

```
B>MSBACKUP /T88/09/30
```

Explanation : Only backup the files dated 88/09/30 to 8mm MT.

To back up files of specified dates

```
B>MSBACKUP /T88/09/30-88/10/03
```

Explanation : Only backup the files dated between 88/09/30 and 88/10/03 to 8mm MT.

File names which can be specified by the /L and /R options are:

/L	All
/L¥*.ASM	All ASM file within root
/L¥¥*.ASM	All ASM files in all directory
/L¥BIN¥*.EXE	All EXE files in ¥BIN
/L¥BIN¥¥*.OBJ	All OBJ files in the directory under ¥BIN

Chapter 15. SFTFMT.EXE

15.1 Outline

This is to initialize the MS-DOS drive within CD Contents. This device driver can set a minimum of 1 drive to a maximum of 8 drives of MS-DOS partitions. Each drive can be expanded up to 60M.

15.2 Execution Method

SFTFMT.EXE is executed from the MS-DOS command line.

15.3 Format

SFTFMT [Drive : Volume name]

15.4 Options

No options available

15.5 Directions

In the following cases, use this command to format. Also backup your data before formatting.

- 1) When you change parameters of SCSIDEV.SYS in CONFIG.SYS.
- 2) When you delete all the files in a temporary drive and construct a new file.

If the following drive name: volume name is input at the command line, the program will wait for a confirming Y key. If other than the Y key is pressed, it returns to the command line without doing anything. Pressing the Y key will analyze drive parameters, clear the FAT area, set a volume name at the start of a directory area, and clear everything else. Date and time of the occurrence will be written with the volume name.

```
A>SFTFMT E:60M_Disk
```

```
Format E: OK? (Y)
```

You can use any characters for a volume name. For the file name, only use the characters allowed in MS-DOS.

EJECTEX.EXE

Chapter 16. EJECTEX.EXE

16.1 Outline

This is to open the door of the 8mm MT unit. If a 8mm MT is installed, rewind the 8mm MT before opening the door.

16.2 Execution Method

EJECTEX.EXE is executed from the MS-DOS command line.

16.3 Format

EJECT

16.4 Options

No options available

HD384FMT.EXE

Chapter 17. HD384FMT.EXE

17.1 Outline

This is to physically format the Hu7 CD Contents Hard Disk Unit.

17.2 Execution Method

HD384FMT.EXE is executed from the MS-DOS command line.

17.3 Format

HD384FMT

17.4 Options

No options available.

17.5 Directions

This command will bring up the following display.

Initialize Hu7 CD Contents Hard Disk Unit
OK? (Y)

The Y key will start initialization. Other keys will end the command without initializing.

Note: It will take more than 20 minutes to execute this command. Start restoring by using the message data of the first track of a 8mm MT.

HDTOC.EXE

Chapter 18. HDTOC.EXE

18.1 Outline

This is to create files of TOC information in CD Contents. Create files of TOC information to use as a part of master documents by using this command.

18.2 Execution Method

HDTOC.EXE is executed from the MS-DOS command line.

18.3 Format

HDTOC File name

18.4 Options

No options available.

18.5 Directions

This command will output TOC information to the specified file. Print this file as a part of the documents to turn in with the masters.

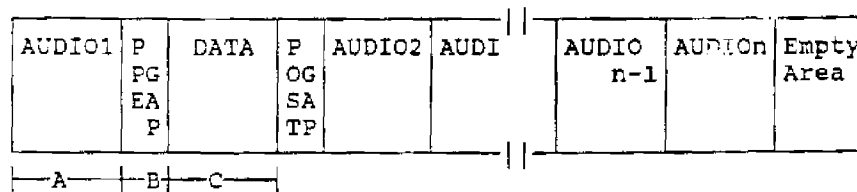
-----Information-----

Explanation of the File Management Method of CD System

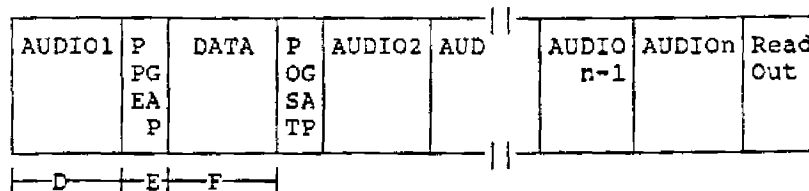
All files in CD Contents are managed by the MS-DOS files called CD_DOC.DIR. These files are located in the root directory of the first MS-DOS drive (an 8M drive can be used without option specification). This drive number is input at the execution of SCSIDEV.SYS. The drive number will not be changed later. Drive D: will remain unchanged (meaning that files may be created in a new drive). Files are not managed by MS-DOS nor a device driver. The CD_DOC.DIR file manages them in each program. Management is done in one direction and addition and deletion is possible from the end of the file as a rule. However, withn HDWRITE, if the size of a new file is smaller than or the same as the target file, it can be written over at the same location. If 8 HEX digits are specified after the /U option of HDWRITE, the capacity will be expanded from the first writing. It means that you always write on the same location. Files in the middle can be deleted by putting a delete mark on them, but it does not necessarily increase the empty area within the file. The only way to delete a file completely is to backup to 8mm MT once, then use the HDMUSIC.EXE MT command to initialize CD Contents and then restore only the specified files to CD Contents. Both DATA and AUDIO are managed by 2048 bytes per record. Only INFGET.EXE and CDEMULEXE are recalculated to 2353 bytes for one record. Record number 0 means 00 minutes 02 seconds 00 frame. One record is one frame (1/75 seconds).

Differences between CD system record number management and the actual CD ROM

CD system considers 2048 bytes as one record.



CD ROM (AUDIO is considered as 2352 bytes and DATA as 2048 bytes per record)



AUDIO area record computation $D = (A * 2048 + 2351) / 2352$ Integral value
 GAP area record computation $E = B$
 DATA area record computation $F = C$

CD_DOC.DIR file contents

OFFSET	LENGTH	CONTENTS
00H	1	Attribute (80H=DATA, C0H=AUDIO, 00H=Nonsense)
01H	3	Record no. of 2048 bytes unit (LOW,MID,HIGH)
04H	3	No. of record of 2048 bytes unit (LOW,MID,HIGH)
07H	6	Group name
0DH	8	File name (Label name)
13H	3	Extension
18H	4	No. of byte (From low byte to high byte)
1CH	2	Time (Time format of MS-DOS file)
1EH	2	Date (Date format of MS-DOS file)

DUMP example of CD_DOC.DIR file

```

00000000      00 00 00 00 18 0F 00 43-44 5F 52 4F 4D 4D 45 53
00000010      53 41 47 45 00 00 00 00-00 CD 7B 00 21 97 58 10

00000020      00 18 0F 00 E8 00 00 53-59 53 54 45 4D 50 52 45
00000030      5F 47 41 50 20 33 53 20-00 40 07 00 58 10 58 10

00000040      80 00 10 00 08 00 00 54-45 53 54 00 00 54 45 53
00000050      54 00 00 00 00 42 49 4E-2A 03 00 00 3D 7C 8E 10

00000060      80 08 10 00 10 00 00 54-45 53 54 00 00 46 4F 52
00000070      44 00 00 00 00 43 47 00-00 74 00 00 8C 79 8E 10

```

Above CD Contents in HDWRITE /L display

```

MD_GROUP_NAME___.EXT__BYTES_YY/MM/DD_HH:MM:SS_RECORD_LENGTH
A CD_ROM MESSAGE. 7913472 88-02-24 18:57:02 $000000 $000F18
* SYSTEM PRE_GAP.3S 475136 88-02-24 02:02:48 $000F18 $0000E8
D TEST TEST .BIN 810 88-04-14 15:33:58 $001000 $000008
D TEST FORD .CG 29696 88-04-14 15:12:24 $001008 $000010

```


About IPL

```

      seg      cseg
-----
;      IPLINF
;
iplintop:
      db      0      ;00 IPLBLK H      ;load start block no. of CD
      db      0      ;01 IPLBLK M      ;load start block no. of CD
      db      0      ;02 IPLBLK L      ;load start block no. of CD
      db      0      ;03 IPLBLN      ;load block length of CD
      db      0      ;04 IPLSTA L      ;program load address L
      db      0      ;05 IPLSTA H      ;program load address H
      db      0      ;06 IPLJMP L      ;program execute address offset L
      db      0      ;07 IPLJMP H      ;program execute address offset H
;
      db      ?      ;08 IPLMPR2      ;ipl set mpr2
      db      ?      ;09 IPLMPR3      ;ipl set mpr3
      db      ?      ;10 IPLMPR4      ;ipl set mpr4
      db      ?      ;11 IPLMPR5      ;ipl set mpr5
      db      ?      ;12 IPLMPR6      ;ipl set mpr6
;
      db      ?      ;13 OPENMODE      ;opening mode
                                ;bit76543210
                                ; ||| | data read to vram
                                ; ||| | 0 : not read
                                ; ||| | 1 : read
                                ; ||| | data read to adpcm
                                ; ||| | 0 : not read
                                ; ||| | 1 : read
                                ; || | bg display
                                ; || | 0 : display on
                                ; || | 1 : display off
                                ; || | adpcm play
                                ; || | 0 : play
                                ; || | 1 : not play
                                ; || | adpcm play mode
                                ; || | 0 : single
                                ; || | 1 : repeat
;
      db      ?      ;14 GRPBLK H      ;opening graphic data record no.
      db      ?      ;15 GPRBLK M      ;opening graphic data record no.
      db      ?      ;16 GRPBLK L      ;opening graphic data record no.
      db      ?      ;17 GRPBLN      ;opening graphic data length
      db      ?      ;18 GRPADR L      ;opening graphic data read address L
      db      ?      ;19 GRPADR H      ;opening graphic data read address H
;
      db      ?      ;20 ADPBLK H      ;opening ADPCM data record no.
      db      ?      ;21 ADPBLK M      ;opening ADPCM data record no.
      db      ?      ;22 ADPBLK L      ;opening ADPCM data record no.
      db      ?      ;23 ADPBLN      ;opening ADPCM data length
      db      ?      ;24 ADPRATE      ;opening ADPCM sampling rate
;

```

```
db 0 ;25 ;(reserve)
db 0 ;26 ;(reserve)
db 0 ;27 ;(reserve)
db 0 ;28 ;(reserve)
db 0 ;29 ;(reserve)
db 0 ;30 ;(reserve)
db 0 ;31 ;(reserve)
;
db 'PC Engine CD-ROM SYSTEM',0 ;(ID string)
db 'Copyright HUDSON SOFT / NEC Home Electronics, Ltd.',0
db ' ;program name (16 bytes)
db ' ' ; (6 bytes)
;=====
```

